

Abstract**Pendulum Impact Test Rig**

5 The pendulum impact test rig is designed and developed for simulating impact conditions experienced by structural components in real-world crash or full-scale crash test. The test rig can be adopted for crash testing individual vehicle component. The test rig comprises of a base plate which is anchored to a concrete ground, a pendulum supporting structure positioned on the base plate, a pendulum
10 member constructed from structural T-beam that permanently secured to a rotatably shaft, and a test item holding device releasably mounted on the base plate. The pendulum member includes a striker which is releasably attached to the lower end portion of the pendulum, fixed masses permanently secured at the lower end portion of the pendulum, and additional masses detachably attached immediately above the
15 fixed masses. With present preferred embodiment, the center of percussion is controlled within the striking zone. Computer-based instrumentation system, which comprises accelerometer, high speed imaging system, light beam emitter-detector velocity measurement, data acquisition card, and computer with data acquisition and analysis application software installed is provided so that the desired data can be
20 acquired for analysis and presentation.